

REMARKS

The applicant has received and reviewed the Office Action mailed June 2, 2004. The applicant originally submitted claims 1-10 in this application. By the present Response and Amendment, the applicant has canceled claims 1-10 and added new claims 11-17. Thus, claims 11-17 are pending in this application. The applicant has not introduced any new matter.

In the Office Action, the Examiner reminded the applicant of the proper language and format for the abstract of the disclosure. In response thereto, the applicant has replaced the original abstract with a new abstract. The applicant respectfully submits that the new abstract meets the requirements for a proper abstract.

In the Office Action, the Examiner objected to claims 4 and 10 because of informalities related to extra spaces between some of the lines of the claims. The applicant has canceled claims 4 and 10, thus removing the basis for the objection. Therefore, the applicant respectfully requests that the Examiner withdraw the objection.

In the Office Action, the Examiner rejected claims 1 and 5-7 under 35 U.S.C. §102(a) as being anticipated by Ho et al. (US Patent No. 5,317,596; issued May 31, 1994). Also, the Examiner rejected claims 2 and 8 under 35 U.S.C. §103(a) as being unpatentable over Ho et al. in view of Unerdem (US Patent No. 4,617,535; issued October 14, 1985). The applicant respectfully traverses the rejections in view of the new claims 11-17 submitted above and the remarks provided hereinbelow. Also, the applicant has canceled original claims 1-8, thus removing them from consideration.

The applicant has added new claims 11-17 to more clearly recite the applicant's invention. The applicant's invention as recited in the new claims 11-17 is directed to a method for reducing interblock interference (IBI) in an impulse response signal, $h(n)$, e.g., the signal received at the end of a digital subscriber loop (DSL) channel. The method includes computing a time of reference (TOR) based on a windowing function that assumes that the main lobe segment of the impulse response signal does not contribute

IBI power and that the tail segments of the impulse response signal, which fall outside of the main lobe segment of the impulse response signal, contribute a non-uniform amount of IBI power. This method is compared with the windowing functions of conventional methods, which functions assume that the tail segments contribute a uniform amount of IBI power. According to embodiments of the invention, the applicant's different assumption of the power contribution of the tail segments fundamentally changes the manner in which the TOR is determined, which, in turn, reduces the amount of IBI beyond that of conventional methods.

As stated by the Examiner in the Office Action, Ho et al. do not disclose generating a windowing function in which points along tails of the impulse response contribute non-uniform amounts of interblock interference. However, the Examiner states that Unerdem, at col. 2, lines 3-11, 19-33 and 39-66, discloses an echo modulator in which computing an optimum time of reference (TOR) comprises generating a windowing function that assumes that points along tails of an impulse response contribute non-uniform amounts of interblock interference. Accordingly, the Examiner states that it would have been obvious to one of ordinary skill in the art to modify Ho et al. to include the cited subject matter of Unerdem.

In general, Unerdem relates to the use of digital echo modulation to reduce high frequency components of phase shift keying (PSK), which is a type of modulation for modem transmission. More specifically, Unerdem is directed to an apparatus and method for reducing the amount of memory needed by a modulator to implement digital echo modulation. As part of the background discussion in Unerdem, a general discussion of digital echo modulation is given. As part of this discussion, the term windowing function is mentioned. However, it is mentioned in the context of modifying a modulated carrier that is being transferred back into the frequency domain after having been transferred from the frequency domain to the time domain to be modified in a manner that removes all but the primary echoes of the signal element.

Nothing in the cited text in Unerdem discusses anything about interblock

interference power contributed by various segments of the signal, much less the contributions of a main lobe segment and tail segments of an impulse signal response transmitted through a DSL channel. Unerdem does not even mention signal main lobe segments or tail segments. The bulk of the cited text discusses combining four different signals to form a composite signal that has smooth transitions from one element to the next without disrupting phase shift information encoded in the four signals. Thus, the cited text in Unerdem clearly is unrelated to the applicant's invention.

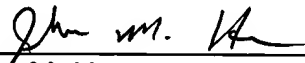
Therefore, the applicant respectfully submits that Unerdem does not cure the deficiencies of Ho et al. in teaching or suggesting the applicant's invention. Nothing in Ho et al. alone or in combination with Unerdem discloses or suggests reducing IBI in a DSL channel impulse signal based on the unique assumptions of the power contributions of the various segments of the impulse response as discussed in the applicant's specification and recited in the applicant's new claims 11-17. Accordingly, the applicant respectfully requests that the Examiner withdraw the rejections under 35 U.S.C. §102(a) in view of Ho et al. and under 35 U.S.C. §103(a) in view of Ho et al. and Unerdem.

The Examiner rejected claims 3, 4, 9 and 10 under 35 U.S.C. §103(a) as being unpatentable over Ho et al. in view of Unerdem as applied to claims 1, 2 and 8, and further in view of Eriksson (US Patent No. 6,466,666, issued October 15, 2002). The applicant respectfully traverses the rejection. As discussed hereinabove, the applicant's invention as recited in the new claims 11-17 is not disclosed or suggested by Ho et al. alone or in combination with Unerdem. Eriksson, which is cited for its alleged teaching of generating a TOR optimizing function by minimizing a cross-correlation between the windowing function and the square of the impulse response, does not cure the deficiencies of the combination of Ho et al. and Unerdem in teaching or suggesting the applicant's invention as recited in the new claims 11-17. Therefore, the combination of Ho et al., Unerdem and Eriksson still does not teach or suggest the applicant's invention as recited in the new claims 11-17. Accordingly, the applicant respectfully requests that the Examiner withdraw the rejection.

CONCLUSION

In view of the amendments submitted herein and the above comments, the applicant respectfully submits that all grounds of rejection are overcome and that the application has now been placed in full condition for allowance. Accordingly, the applicant earnestly solicits early and favorable action. Should there be any further questions or reservations, the Examiner is urged to telephone the applicant's undersigned attorney at (770) 984-2300.

Respectfully submitted,



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